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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,592	02/27/2004	Stig Pedersen-Bjergaard	03-41 US	6822
23693	7550	05/28/2008		
Varian Inc. Legal Department 3120 Hansen Way D-102 Palo Alto, CA 94304			EXAMINER MUI, CHRISTINE T	
			ART UNIT 1797	PAPER NUMBER
			MAIL DATE 05/28/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary****Application No.**

10/788,592

**Applicant(s)**

PEDERSEN-BJERGAARD ET AL.

**Examiner**

CHRISTINE T. MUI

**Art Unit**

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2, 4-6, 9-20, 22-24 and 46-53 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 47 and 51 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 6, 9-20, 22-24, 46, 48-50, 52 and 53 is/are rejected.
- 7) ☒ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-894)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments, see REMARKS, filed 14 February 2008, with respect to the rejection(s) of claim(s) 1-2, 4-6, 9-20, 22-24, 46 and 48-50 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of WO 02/0088672 ; USP 5,637,224 to Sirkar et al.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-2, 6, 13-20, 22-24, 46, 48-50 and 52-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/0088672 (herein referred "Varian, Inc.", and further in view of USP 5,637,224 to Sirkar et al (herein referred 'Sirkar').
6. Regarding claims 1 and 52, the reference Varian, Inc. discloses a device for performing clean-up and enrichment of analytes of interest. A donor sample comprising of an analyte of interest is inserted into a tubular hollow porous fiber into a well, where the hollow fiber comprises of a liquid extraction membrane. The hollow fiber enclosing an internal cavity is separated from the donor sample by the extraction membrane and a static acceptor liquid is placed in the internal cavity. Enriching a cleaning up of the analyte of interest by extracting the analyte of interest from the donor is through the extraction membrane into the acceptor liquid in the internal cavity. The analyte of interest is transferred and the acceptor liquid from the internal cavity is transferred to the analysis device (see page 1, line 29 – page 2, line 5). Varian, Inc. does not disclose the membrane comprising of a support comprising of a fatty acid ester or a vegetable oil. Sirkar discloses vaporizable solute transfer system for transferring a vaporizable solute from an aqueous feed solution to an extractant liquid comprising a fluid tight housing. Within the housing is preferentially wettable porous membrane that divides the housing

into two chambers. One chamber contains a feed solution and the other contains a liquid extractant. The membrane is preferably in the form of a hollow fiber and is mechanically strong enough to withstand the interface immobilizing pressure difference imposed across the membrane. The extractant liquid refers to a polar organic liquid that can be used to form a liquid membrane. The extractant liquid may be any organic liquid membrane includes decanol, octanol, long chain alkanes, such as dodecane, vegetable oil or mineral oil (see abstract, column 5, lines 19-48). It would have been obvious to one having ordinary skill in the art to use vegetable oil to provide effective membrane separation and isolation of products such as VOC from a sample.

7. Regarding claim 2, the references Varian, Inc. and Sirkar disclose the claimed invention. Varian, Inc. discloses the membrane used in the invention can be produced in many forms such as a hollow fiber (see page 6, lines 9-10).

8. Regarding claim 6, the references Varian, Inc and Sirkar disclose the claimed invention. Sirkar discloses a liquid membrane to be used as an extractant liquid can include liquid such as decanol, octanol, long chain alkanes, such as dodecane, vegetable oil, silicone oil or mineral oil (see column 5, lines 33-38). Sirkar does not specifically disclose the vegetable oil is soya oil, olive oil or tea tree oil, but it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid membrane to be a vegetable oil that is soya, olive or tea tree oil to promote effective separation and isolation of samples.

9. Regarding claims 13-15, the references Varian, Inc. and Sirkar disclose the claimed invention. Varian, Inc. discloses the polymeric membrane from the polymerization of monomers in the pores of the support materials which can be a polymer such as polyalkylene glycols, polyvinylpyrrolidones, polyesters, polyurethanes and functionalized polyolefins. The fibers in the well plates may also be modified by several permutations and combinations of parameters to incorporate selectivity features, which would permit the isolation of a single analyte from a complex mixture. The fibers can be made from different polymeric materials such as polypropylene, polysulfone, polycarbonate or polyether sulfone (see page 8, line 30-page 9, line 1, page 10, lines 13-18).

10. Regarding claim 16-17, the reference Varian, Inc. and Sirkar disclose the claimed invention. Varian, Inc. does not disclose the liquid membrane is stable for at least 30, 60 or 90 days and where the hollow fiber is able to extract at least one analyte after being stored for at least 30, 60 or 90 days. Varian, Inc. does not disclose the liquid membrane is stable for at lease 30, 60 or 90 days. Neither Varian Inc nor Sirkar disclose storing the liquid membrane for exactly 30, 60 or 90 days, but Sirkar discloses the extractant or liquid membrane is stored in an extractant liquid membrane reservoir at a constant pressure and enters the fluid tight housing through the extractant or liquid membrane inlet and is discharged when necessary through the extractant or liquid membrane outlet (see column 7, lines 33-48). It would have been obvious to one having ordinary skill in the art at the time the invention was made to store the liquid

Art Unit: 1797

membrane for 30, 60 or even 90 days to keep a liquid membrane on hand for immediate use.

11. Regarding claim 18, the reference Varian, Inc. and Sirkar disclose the claimed invention. Varian, Inc. discloses in a two-phase extraction system an aqueous feed solution is on the shell side of the fiber and organic solvent acceptor solution is on the lumen side with the same solvent forming the supported membrane (see page 12, lines 1-3).

12. Regarding claim 19, the reference Varian, Inc. and Sirkar disclose the claimed invention. Varian, Inc. discloses in a simple supported liquid membrane hollow fiber devices can be employed in the well plate and an autosample vial formats in a state mode can furnish a high degree of sample enrichment (see page 11, lines 30-32).

13. Regarding claim 20, the reference Varian, Inc. discloses a device for performing clean-up and enrichment of analytes of interest. A donor sample comprising of an analyte of interest is inserted into a tubular hollow porous fiber into a well, where the hollow fiber comprises of a liquid extraction membrane. The hollow fiber encloses an internal cavity separated from the donor sample by the extraction membrane and a static acceptor liquid is placed in the internal cavity. Enriching a clean up of the analyte of interest is done by extracting the analyte of interest from the donor through the extraction membrane into the acceptor liquid in the internal cavity. The analyte of interest is transferred and the acceptor liquid is transferred from the internal cavity to the analysis device (see page 1, line 29 – page 2, line 5). Varian, Inc. does not disclose the membrane comprising of a support comprising of a fatty acid ester, a vegetable oil or a

silicon oil. Sirkar discloses vaporizable solute transfer system for transferring a vaporizable solute from an aqueous feed solution to an extractant liquid comprising a fluid tight housing. Within the housing is preferentially wettable porous membrane that divides the housing into two chambers. One chamber contains a feed solution and the other contains a liquid extractant. The membrane is preferably in the form of a hollow fiber and is mechanically strong enough to withstand the interface immobilizing pressure difference imposed across the membrane. The extractant liquid refers to a polar organic liquid that can be used to from a liquid membrane. The extractant liquid may be any organic liquid membrane includes decanol, octanol, long chain alkanes, such as dodecane, vegetable oil or mineral oil (see abstract, column 5, lines 19-48). It would have been obvious to one having ordinary skill in the art to one having ordinary skill in the art at the time the invention was made to modify the liquid membrane to be vegetable oil to provide effective membrane separation and isolation of products such as VOC from a sample.

14. Regarding claims 22-23, the references Varian, Inc. and Sirkar disclose the claimed invention. Varian, Inc. discloses the polymeric membrane is formed from the polymerization of monomers in the pores of the support materials which can be a polymer such as polyalkylene glycols, polyvinylpyrrolidones, polyesters, polyurethanes and functionalized polyolefins. The fibers in the well plates may also be modified by several permutations and combinations of parameters to incorporate selectivity features, which would permit the isolation of a single analyte from a complex mixture. The fibers can be made from different polymeric materials such as polypropylene,



Art Unit: 1797

polysulfone, polycarbonate or polyether sulfone (see page 8, line 30-page 9, line 1, page 10, lines 13-18).

15. Regarding claim 24, the reference Varian, Inc. and Sirkar disclose the claimed invention. Varian, Inc. does not disclose the liquid membrane is stable for at least 30, 60 or 90 days. Neither Varian Inc nor Sirkar disclose storing the liquid membrane for exactly 30, 60 or 90 days, but Sirkar discloses the extractant or liquid membrane is stored in an extractant liquid membrane reservoir at a constant pressure and enters the fluid tight housing through the extractant or liquid membrane inlet and is discharged when necessary through the extractant or liquid membrane outlet (see column 7, lines 33-48). It would have been obvious to one having ordinary skill in the art at the time the invention was made to store the liquid membrane for 30, 60 or even 90 days to keep a liquid membrane on hand for immediate use.

16. Regarding claim 46, the reference Varian, Inc. and Sirkar disclose the claimed invention. Varian, Inc. discloses a membrane that is used for aqueous solutions, the supported liquid membrane is typically a water immiscible organic solvent. Furthermore, the supported membranes are chosen from nitrophenylalkylethers ranging from pentyl to decyl for the alkyl part (see 8, lines 11-20).

17. Regarding claim 48, the references Varian, Inc. and Sirkar disclose the claimed invention. Sirkar discloses the extractant or liquid membrane is stored in an extractant liquid membrane reservoir at a constant pressure and enters the fluid tight housing through an inlet and discharged when necessary through the outlet (see column 7, lines 51-column 8, line 4). It would have been obvious to one having ordinary skill in the art

Art Unit: 1797

at the time the invention was made to store the liquid membrane in a container before use so that membrane can be preserved and not dried out if exposed to the environment and not be contaminated by the surrounding environment.

18. Regarding claim 49, the references Varian, Inc. and Sirkar disclose the claimed invention. Sirkar discloses that the vaporizable solute transfer unit is a hollow fiber contained liquid membrane system where one set of hollow fiber is of a hydrophobic porous fibers is placed in a fluid tight housing and a liquid membrane that is initially stored in an extractant liquid membrane reservoir enters the fluid tight housing through an inlet and is in contact with the porous hollow fiber in the fluid tight housing until it is discharged when necessary through the outlet (see column 7, lines 33-48). It is interpreted by the examiner that the fluid tight housing is the storage container where the hollow fiber and liquid membrane are together before it is allowed to flow through the system. It would have been obvious to one having ordinary skill in the art at the time the invention was made to store the hollow fiber and liquid membrane in a closed container prior to use so that the liquid membrane and hollow fiber provide a sufficient membrane to separate and isolate contents of the sample and to have a hollow fiber and liquid membrane ready to be used immediately when needed.

19. Regarding claim 50, the reference Varian, Inc. and Sirkar disclose the claimed invention. Varian, Inc. discloses a membrane that is used for aqueous solutions, the supported liquid membrane is typically a water immiscible organic solvent. Furthermore, the supported membranes are chosen from nitrophenylalkylethers ranging from pentyl to decyl for the alkyl part (see 8, lines 11-20).

20. Regarding claim 53, the references Varian, Inc. and Sirkar disclose the claimed invention. Varian, Inc. discloses in the supported liquid membranes the pH of the donor solution is adjusted below the pKa value of the acid, the ionization of the carboxylic acid is suppressed and the nonionic form to be extracted is allowed to form into the immobilized liquid membrane. Polymeric membranes are also formed by the polymerization of monomers in the pores of the support material (see page 7, lines 8-11, page 8, lines 30-31).

21. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Varian, Inc. and Sirkar as applied to claim 10 above, and further in view of Macasek et al (herein referred 'Macasek').

22. Regarding claims 11-12, the references Varian, Inc. and Sirkar disclose the claimed invention except for where the carrier is an organic ion selected from the list presented in the claim. Macasek discloses an emulsion membrane system for preconcentration of uranium. A liquid membrane containing tri-n-octylphosphine oxide/ TOPO/ and di-2-ethylhexylphosphoric acid/DEHPA was used as carrier for uranium VI peractoin. DEHPA as a membrane carrier was used with a solution of sulfuric and phosphoric acid (see abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use TOPO or DEHPA as a carrier to promote flow of analytes or diffusion through the membrane for faster separation.

***Allowable Subject Matter***

23. Claims 47 and 51 are allowed.

Art Unit: 1797

24. A hollow fiber liquid membrane on a porous polymeric substrate with a preservative in the use of liquid extraction is not found in the prior art.
25. Claims 4-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
26. A device for performing liquid phase microextraction that uses liquid membrane consisting of a fatty acid ester that further comprises of an acyl chain from 12 to 30 carbon and an ester portion that comprises from 1 to 12 carbon atoms is not found in the prior art.

### ***Conclusion***

27. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTINE T. MUI whose telephone number is (571)270-3243. The examiner can normally be reached on Monday-Thursday 7-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on (571) 272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CTM

/Walter D. Griffin/  
Supervisory Patent Examiner, Art Unit 1797